

CLAIMS:

1. A communication system comprising:
- a central office (CO) of a communication service provider and at least one subscriber premise (SP), each SP being linked to a CO by a subscriber-associated communication line comprising a twisted pair telephone line;
 - at least one xDSL modem in the CO coupled to said subscriber-associated communication line; and
 - a plurality of communication devices in each SP, said devices comprising one or more telephone devices connected to the communication line and at least one network DSL (NDSL) modem associated with a computerized device, the NDSL modem being connected to said communication line; each of said modems having an upstream transmitter and a downstream receiver for communication with the CO and an upstream transmitter and an upstream receiver for communication with other NDSL modems within the SP.
2. A communication system according to Claim 1, wherein said NDSL modem comprises a means for transmitting a control signal to which the CO modem is not receptive and which signals at least one other DNSL modem to be ready to receive data packets.
3. A communication system according to Claim 2, wherein said control signal is at a frequency not used for communication between the NDSL modem and the CO.
4. A communication system according to ^{Claim 1} ~~any one of Claims 1-3~~, wherein the communication between the NDSL modems and the CO modem is in the ADSL frequency bands.
5. A communication system according to Claim 4, wherein the NDSL modems transmits data to the CO modem in the ADSL upstream frequency band and receive data therefrom at the ADSL downstream frequency band, and exchanges (transmit and receive) data with other NDSL modems within the SP in

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the ADSL upstream frequency band during time periods in which none of said modems is communicating with the CO.

a 6. A communication system according to ^{claim 1} ~~any one of Claims 1-4~~, wherein the NDSL modem comprises also a VDSL upstream transmitter and a VDSL upstream receiver for communication with other NDSL modems within the SP subscriber premise in the VDSL upstream frequency band.

a 7. A communication system according to ^{claim 1} ~~any one of Claims 1-6~~, comprising a universal ADSL/VDSL upstream transmitter and a VDSL downstream receiver for high speed communication within the VDSL frequency bands with the CO.

10 8. A communication system according to any one of Claims 1-4, comprising at least one N.LITE modem associated with a computerized device, the modem comprising an ADSL upstream transmitter and an ADSL upstream receiver for communication with only other N.LITE or NDSL modems within the SP.

15 9. A communication system according to Claim 8, wherein at least one of said N.LITE modems is comprised within an NDSL set-up box which comprises also an RF transceiver for control, through radio frequency transmission within the SP.

20 10. A local network installed in premises of a subscriber of a communication service, the network being linked to an xDSL modem of a central office (CO) of a communication service provided by a communication line comprising a twisted pair telephone line, the network comprising:

25 a plurality of communication devices comprising one or more telephone devices connected to the communication line and at least one network DSL (NDSL) modem associated with a computerized device, the NDSL modem being connected to said communication line; each of said modems having an upstream transmitter and a downstream receiver for communication with the CO and an upstream of transmitter and an upstream receiver for communication with other NDSL modems within the SP.

30 11. A network according to Claim 10, wherein said NDSL modem comprises means for transmitting a control signal to which the CO modem is not receptive

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and which signals at least one other DNSL modem to be ready to receive data packets.

12. A network according to Claim 11, wherein said control signal is at a frequency not used for communication between the NDSL modem and the CO.

a 5 13. A network according to ^{Claim 10} ~~any one of Claims 10-12~~, wherein the communication bands between the NDSL modems and the CO modem is in the ADSL frequency bands.

14. A network according to Claim 13, wherein the NDSL modems transmits data to the CO modem in the ADSL upstream frequency band and receive data
10 therefrom at the ADSL downstream frequency band, and exchanges (transmit and receive) data with other NDSL modems within the SP in the ADSL upstream frequency band during time periods in which none of said modems is communicating with the CO.

15 15. A network according to ^{Claim 10} ~~any one of Claims 10-13~~, wherein the NDSL modem comprises also a VDSL upstream transmitter and a VDSL upstream receiver for communication with other NDSL modems within the SP subscriber premise.

16. A network according to ^{Claim 10} ~~any one of Claims 10-15~~, comprising a universal ADSL/VDSL upstream transmitter and a VDSL downstream receiver for high
20 speed communication within the VDSL frequency bands with the CO.

a 17. A network according to ^{Claim 10} ~~any one of Claims 10-13~~, comprising at least one N.LITE modem associated with a computerized device, the modem comprising an ADSL upstream transmitter and an ADSL upstream receiver for communication with only other N.LITE or NDSL modems within the SP subscriber premise.

25 18. A network according to Claim 17, wherein at least one of said N.LITE modems is comprised within an NDSL set-up box which comprises also an RF transceiver for control, through radio frequency transmission, of appliances with the SP subscriber premise.

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19. A home network DSL (NDSL) modem comprising:

- an upstream transmitter and a downstream receiver for communication with an xDSL modem placed at a central office (CO) of a communication service provider through a twisted pair telephone line linking the NDSL modem and the xDSL CO modem, and comprising an upstream transmitter and an upstream receiver for communication with other NDSL modems included within the same subscriber premise.

20. A modem according to Claim 19, comprising a means for transmitting a control signal to which a CO modem is not receptive for signaling at least one other NDSL modem to be ready to receive data packets.

21. A modem according to Claim 20, wherein said control signal is at a frequency not used for communication between the NDSL modem and the CO.

22. A modem according to ^{claim 19} ~~any one of Claims 19-21~~, wherein the upstream transmitter and upstream receiver for communication with the xDSL modem of the CO, are transmitting and receiving, respectively in the ADSL frequency bands.

23. A modem according to Claim 22, wherein data transmission to the CO xDSL modem in the ADSL upstream frequency band and data transmission therefrom is in the ADSL downstream frequency band, and is capable of exchanging data with other NDSL modems within the home location in the ADSL upstream frequency band.

24. A modem according to Claim 23, wherein said upstream transmitter and said downstream receiver can communicate with the CO xDSL modem in VDSL upstream and downstream frequency bands, respectively.

25. An NDSL model according to ^{claim 19} ~~any one of Claims 19-24~~, comprised within an NDSL set-up box which comprises also an RF transceiver for control, through radio frequency transmission, a home device.

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